Compact Spinning
Compact-Spinning Machine K 47

Fully compacted yarns produced with high flexibility
Energy Saving of up to 25%
The combination of a unique compacting system and energy-efficient machine concept allows for an overall energy saving of up to 25%.
The individual spindle monitoring system (ISM) checks the running behavior of each individual spinning position. This optimizes operator guidance and increases the machine efficiency.
High Machine Efficiency
Maximum Production Time

K 47
The new, electronic drafting system drive allows fast adjustment of yarn parameters on the operating unit.
Wide Range of Raw Materials and Yarn Quality Monitoring

New wear-resistant coating on the sieve drum
precise fiber guidance thanks to air-guide element Detect

Overall Energy Saving of up to 25%

Unique compacting system with energy-efficient machine concept

High Machine Efficiency

Integrated individual spindle monitoring (ISM basic) with LEDs at each spinning position

Economical Doffing

Authentic doffing without underwinding with SERVOgrip and self-monitoring grippers

Highest Level of Productivity at Lowest Maintenance Costs

Unique spinning geometry and optimized machine elements

* Option
OUTSTANDING ADVANTAGES

**Full Flexibility for Special Yarns**
Equipment for spinning core, slub and twin yarns*

**Minimal Workload**
Tube loader ROBOload and system WILDload with direct tube transfer from the trolley*

**Maximum Production Time**
Electronic drafting system FLEXIdraft
Energy Saving of up to 25%

Save up to 4% energy with the LENA spindle*

The LENA spindle has been specially developed for high spindle speeds and low energy consumption. A whorl diameter of 17.5 mm and other optimizations make a significant impact on energy efficiency.

Low energy consumption due to one-duct system and air guide element

The Rieter compacting system has the lowest energy consumption in comparison to other compacting systems available on the market. The shared, central suction duct reduces the energy consumption needed to generate the vacuum. The large cross-section of the suction duct reduces air resistance. This results in a considerable reduction in energy consumption.

The air guide element Detect covers the compacting zone. As a result, the air flow is directed in a targeted manner, significantly reducing the air flow rate required for compacting. Detect also contributes to the reduction in energy consumption.

* Option
Efficient main motor saves up to 4% energy*

The particularly efficient 110-kW main drive motor was developed for machines with up to 1,824 spindles and high speeds to save energy. It can also be used profitably on machines with fewer spindles and low speeds.

Economical cop transport SERVOdisc

The SERVOdisc system is an open system, which means less maintenance is required. The system is driven by two diagonally offset 70-Watt motors. This requires only 10% of the energy compared to a pneumatic system.

Uniform vacuum

Machines with an intermediate drive feature a suction unit on both the head and foot of the machine. The speed of the air flow is reduced and the vacuum level along the K 47 becomes more uniform and energy-efficient.

* Option
Energy-saving 4-spindle tape drive

The Rieter 4-spindle tape drive is energy-efficient and easy to handle. The large enlacement of 90 degrees ensures that every spindle operates without failure, even with minimal contact pressure. The low contact pressure guarantees low energy consumption.
High Machine Efficiency

Reliable ends down display with ISM basic

The individual spindle monitoring system ISM basic is built into the K 47 as standard. Thanks to LEDs at each spinning position and section, the operator can easily recognize where ends down has occurred. The operator is guided directly to the spindles with ends down. This guidance improves operator efficiency and increases the efficiency of the machine.
Even more efficient with ISM premium*

In addition to LEDs at each spinning position, the optional ISM premium also has an LED at each section and additional signal lamps at the head and foot of the machine. They light up as soon as the individually defined limit for ends down is exceeded. The operator is guided to the relevant side of the machine and then to the affected spindle section with the ends down. Thanks to the three-stage display concept, operators are guided to the ends down even more efficiently.

Another function is the permanent monitoring of the speed of the individual spindles. If a spindle runs outside the defined specifications, this is indicated by the LED flashing. This allows the operator to quickly and easily recognize which spindle is not running correctly. The operator can then intervene immediately, which avoids loss of raw material and reduced quality.

As an option, the winding machine can be fitted with spinning position identification*. In the event of faulty cops, the winding machine sends a signal to the ISM, and the second LED illuminates at the relevant spinning position. The operator is guided directly to the incorrectly operating spinning position, where he can intervene immediately.

ISM premium is required for a roving stop device*. If ends down occurs, the ISM sends a signal to the roving stop, which stops the roving feed. This saves raw material.

Helpful data analysis with SPIDERweb*

The mill monitoring system SPIDERweb analyzes all data, indicates weak points and facilitates efficient personnel deployment. This increases both plant efficiency and yarn quality.

* Option
Maximum Production Time

Set yarn parameters electronically

The new electronic drafting system drive FLEXIdraft for the compact-spinning machine K 47 uses frequency-controlled motors. This electronic drafting system drive means less work for operating personnel. Parameters such as yarn count and twist direction can easily be adjusted on the machine display. There is no need to change gear wheels or make any other mechanical adjustments. The operator can also change the Z yarn twist direction or the S yarn twist direction on the operating unit. Mechanical adjustments to the belt tensioner for the spindle drive are now a thing of the past. The balloon control ring is designed so that it does not have to be replaced when the yarn twist direction is changed. This reduces the amount of work required by operating personnel. Machine downtime is minimized when changing material.
Economic startup*

The function FLEXIstart allows the drafting system to be switched on and off in stages. This allows for a more efficient machine startup. Depending on the machine length, a quarter or half of the machine is operated. This avoids unnecessary material waste.

No ends down in the event of a power failure

If a power failure occurs, the rotation energy of the spindles is used to supply the machine controls with electricity. At this time, the main motor switches to generator mode. If there is a power failure lasting less than two seconds, the machine automatically accelerates to the previous operating speed. The machine comes to a controlled stop in extended downtimes. thus avoiding ends down.

Controls during a power failure – reduction of production loss

* Option
Wide Range of Raw Materials and Yarn Quality Monitoring

Basis for a wide range of applications

The sieve drum requires minimal maintenance and is therefore a basis for consistent yarn quality over a prolonged period. The low-wear surface of the sieve drum ensures a good and above all uniform yarn quality over long operating periods. The improved surface coating of the sieve drum means that the K 47 is even capable of processing blends of various raw materials. The machine can therefore be used in a broader range of applications.

Controlled compacting

The compacting unit forms the heart of the compact-spinning machine. The compacting unit comprises the sieve drum, suction insert Bright, and air guide element Detect. The optimal shape of the air guide element and suction insert ensures that the drawn-in air is guided in a targeted manner. The fibers to be spun are neatly and continuously incorporated into the yarn body via the air flow drawn in at the sides. The targeted air routing in the compacting unit prevents dust and fiber particles from being deposited inside the machine. By doing so, the machine is always able to produce fully compacted yarn with the highest strength and low hairiness.

Simple quality monitoring

The new air guide element Detect monitors the air flow to the individual spinning positions. If the underpressure reaches a limit value, a red marking on the air guide element indicates that the compacting unit must be checked. This feature prevents non-compacted yarn being produced. Monitoring each individual spinning position guarantees a consistently high yarn quality.

Targeted air routing via the air guide element Detect

The red marking on the air guide element indicates that the compacting unit must be checked.
Intermediate drive ensures quality

For machines with an intermediate drive unit, the middle bottom roller is also driven in the center of the machine. This reduces the torsional forces on the bottom roller. The even running of the bottom roller ensures a consistent quality of the yarn.

Q-Package – the quality package for cotton*

The quality package Q-Package for cotton contains a nose bar, an “active” cradle (moving deflection edge) and a pressure bar (pin). Fiber guidance between the cradle and the nipping point of the delivery roller is further improved with the Q-Package. The evenness of the yarn (CVM%) is improved by up to one percentage point. At the same time, yarn imperfections are reduced by 10 to 30%.

Ideal fiber guidance in the drafting system

The Ri-Q-Draft drafting system ensures the ideal fiber guidance for most applications and very stable running behavior. The deflection bridge Ri-Q-Bridge is a key component in the spinning process. The optimal position and form of the cradle reduce the distance to the nipping point of the delivery roller. All the listed technology components, including the bottom aprons, are perfectly tailored to each other. This ensures ideal fiber guidance in the main draft zone.

* Option
Economical Doffing

Save yarn with the SERVOgrip system

The proven and unique Rieter SERVOgrip system prevents thread underwinding when doffing. By using SERVOgrip, no yarn residues occur that need to be removed from the whorl. This saves yarn and keeps the machine clean. Ends down caused by fiber fly and yarn residues are also avoided, thus increasing yarn quality.

The SERVOgrip system comprises a special clamping crown. Rieter is the only manufacturer whose clamping crown is opened and closed using the ring rail. This guarantees precise and controlled fixing of the yarn. Ends down following cop changes are thus largely avoided.

Reliable yarn cutting for man-made fiber yarns with the SERVOgrip blade*

Rieter has developed a patented technology that can reduce yarn twisting and yarn count before doffing. When combined with the optional SERVOgrip blade, even high-strength yarns or core yarns can be cut properly when doffing.

Self-monitoring grippers

The doffing system is self-monitoring, including the special profile of the doffer beam and the releasable grippers. In the event of faults, the doffing process is automatically stopped by a pressure monitor, ensuring an error-free doffing process.

Reliable cop transport with SERVOdisc

The cop transport system SERVOdisc works using peg trays that are clipped into a conveyor belt, allowing the tubes and cops to be precisely positioned. After doffing, SERVOdisc reliably transports the full cops to the cop trolley or the winding machine via the tube loader ROBOload.

* Option
Full Flexibility for Special Yarns

Rapid production switchovers

With the new gear technology and middle drive, various devices for producing core yarns and twin yarns can be installed, even in machines with up to 1,824 spindles. The Rieter slub yarn system VARIOspin 4 can be fully integrated into the machine as an option.

VARIOspin 4 for slub yarns*

High-quality slub yarns can be produced with the VARIOspin 4 device for spinning slub yarns. The latest generation servo motors are ideal for the high dynamics involved in slub yarn production.

A range of slub designs can easily be programmed on the operating unit or an external computer using the software provided and reliably reproduced. This allows slub yarns to be produced efficiently and profitably with outstanding Rieter quality.

Simple production of twin yarns*

To produce a twin yarn, two rovings must run to one spinning position. In the drafting system, both are twisted and compacted separately, before being twisted together in the spinning triangle. Due to their thread-like properties, twin yarns improve the quality of the yarn and end product.

Precise production of core yarns*

The core yarn device works with a traversing guide roll for the filament. The traversing system for the filament is identical to the traversing system for the roving. This means the filament thread is precisely integrated into the yarn. Soft, hard, and duo-core yarns (super-stretch) can be produced.

* Depending on fiber length and machine configuration
* Option
Highest Level of Productivity with Lowest Maintenance Costs

Productivity is more than maximum spindle speed

Production can be increased even when the cop is in the build-up stage. The precise machine design of the K 47 and the use of high-quality components allow the machine to run at higher starting speeds. Such speeds can increase production rates, especially in the lower end of the cop size range. The maximum spindle speed is reached quicker. At a yarn count of Ne 30, for example, it is therefore possible to produce an additional 6 500 kilograms of yarn on each machine each year.

Low spinning costs

With the K 47 the labor-intensive and expensive exchange of compacting aprons is not needed. Machine downtimes are avoided. Increased efficiency can be achieved as a result, making it simpler to plan production.
Maximum spindle speeds

With its unique Rieter spinning geometry and the consistent use of high-quality technology components, the K 47 runs at the highest spindle speeds. These high speeds ensure maximum production with a consistently high yarn quality. For example, with a yarn count of Ne 30, up to 10% more yarn can be produced per machine each year.
Minimal Workload

Flexible automation
Various automation options are available. With the SERVODisc system, the compact-spinning machine can either be directly linked with a winding machine or with the tube loader ROBOload.

Tube loader ROBOload with trolley*
The system WILDload means significantly less work for operating personnel. The tubes are loaded into a trolley at the winding machine which is then clicked directly onto the ROBOload. No manual work is required.

* Option
Machine length L [mm]
L = ([no. spindles/2] x gauge) + intermediate drive + Constant (C)

Maximum number of spindles
Up to 1,824 spindles per machine with 70 mm gauge
Up to 1,632 spindles per machine with 75 mm gauge

Machine without an intermediate drive
Up to 1,248 spindles: all raw materials, 70 and 75 mm gauge
Up to 1,440 spindles: 100% cotton, 70 mm gauge

Length of intermediate drive: 600 mm

Constant C dependent on machine specification

<table>
<thead>
<tr>
<th>Suction</th>
<th>One-sided*</th>
<th>Double-sided*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection to Murata, Savio, Schlafhorst</td>
<td>4 180</td>
<td>5 636</td>
</tr>
<tr>
<td>ROBOload without trolley</td>
<td>5 185</td>
<td>6 641</td>
</tr>
<tr>
<td>ROBOload with system WILDload, without trolley</td>
<td>5 828</td>
<td>7 284</td>
</tr>
</tbody>
</table>

*Single-sided suction is available for up to 1,632 spindles. Double-sided suction always has an intermediate drive and is available from 1,296 spindles.

Sample calculation for machine length L [mm]
1,824 spindles, 70 mm gauge, intermediate drive, double suction, link
L = ((1 824/2) x 70) + 600 + 5 636 = 70 076 mm

Machine Data
Compact-spinning machine K 47
## Technical data

### Material
- **Spindle speed**: Mechanical up to 25,000 rpm
- **Installed power**:
  - Main drive motor: 55, 80, 110 kW depending on number of spindles and yarn count
  - Drafting system drive:
    - Without intermediate drive: 5 to 10 kW
    - With intermediate drive:
      - VARIOspin 4 without IMD: 4.38 to 9.84 kW
      - VARIOspin 4 with IMD: 10.64 to 13.24 Nm
    - Ring rail drive: 1.75 kW
- **Single-sided suction (50/60 Hz)**:
  - Up to 720 spindles: 6.5 kW / 6.5 kW
  - 768 – 1,632 spindles: 12.6 kW / 12.6 kW
- **Double-sided suction**:
  - 1,296 – 1,824 spindles: 2 x 6.5 kW

### Power supply
- **Rated voltage**: 380 to 440 V; 50/60 Hz
- **Compressed air**:
  - Min. supply pressure: 7 bar
  - Consumption:
    - 1,440 spindles: approx. 1.5 Nm³/h
    - 1,632 spindles: approx. 1.75 Nm³/h
    - 1,824 spindles: approx. 2 Nm³/h

### Exhaust air
- **Air volume during double-sided suction** (even split of air volume in the head and foot of the machine)
  - 1,296 – 1,824 spindles: 12,420 m³/h
  - 1,824 spindles: 13,824 m³/h
- **Required underpressure at transition point**: 50 to 200 Pa

### Options
- **ISM premium with/without roving stop**
- **Power monitoring**
- **DOFFlock**
- **VARIOspin 4 (cannot be retrofitted)**
- **Core yarn devices**
- **Twin yarn (Com4® ring-twin)**
- **FLEXIStart**
- **110 kW main motor**
- **LENA spindle**
- **ROBOload with system WILDload**
- **Q-Package**
- **SERVOgrip blade**

## Technological data

### Material
- **Cotton**: ≥ 27 mm (1 1/16 in); Man-made fibers and blends up to 51 mm (2")
- **Standard**:
  - Yarn count:
    - Standard Cotton:
      - 59 – 3.7 tex
      - Nm 17 – 270
      - Ne 10 – 160
    - Man-made fibers and blends:
      - 29.5 – 3.7 tex
      - Nm 34 – 270
      - Ne 20 – 160
- **Optional**:
  - Cotton:
    - 59 – 2.4 tex
    - Nm 17 – 423
    - Ne 10 – 250

### Yarn count
- **Twist range**: 200 – 3,000 T/m (5.1 – 76.1 T/in)
- **Draft**:
  - Standard:
    - 8 – 120-fold (mechanical)
  - Optional:
    - 10 – 80-fold (technological)
- **VARIOspin 4 draft (optional)**: 6 – 250-fold

### Machine data
- **Spindle gauge**: 70; 75 mm
- **Ring diameter**:
  - 70 mm gauge: 36, 38, 40, 42, 45 mm
  - 75 mm gauge: 36, 38, 40, 42, 45, 48, 51, (54) mm
- **Number of spindles (gauge 70/75 mm)**:
  - Max.: 1,824/1,632
  - Min.: 288 (144 on request)
  - Per section: 48

### Tube length
- **70 mm gauge**: 180 – 230 mm
- **75 mm gauge**: 180 – 250 mm

### Machine width
- **Over center of spindle**: 660 mm
- **Doffer retracted**: 1,062 mm
- **Doffer extended**: 1,380 mm
Com4® compact
Yarn of Choice
The unique character of the Com4® compact yarn spun on the Rieter compact-spinning machine lies in the almost perfect yarn structure. All fibers lie parallel and are completely integrated in the yarn bundle. Compared to standard compact yarns, it exhibits the highest compacting efficiency. This leads to excellent strength properties. The very low hairiness and the compact structure give both the yarn and the fabrics a high-quality, distinctive appearance. First-rate processing characteristics, high wearing comfort and a luxurious look are the advantages.

Yarn Characteristics
- Highest strength
- Uniform yarn structure
- Low hairiness
- High yarn density

Advantages for Downstream Processing
- High processing speed
- Low ends down during weaving
- High strength after finishing

Fabric Properties
- High fabric tenacity
- Absolutely clear, defined contours
- Finest luster

Typical Applications
- Business shirts
- High-quality knitwear
- Fine bed linen
- Fine hosiery
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